#### RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

| Application Serial Number: | 10/587,085 |
|----------------------------|------------|
| Source:                    | TFWP.      |
| Date Processed by STIC:    | 08/03/2006 |
|                            |            |

# ENTERED



**IFWP** 

**RAW SEQUENCE LISTING**PATENT APPLICATION: **US/10/587,085**DATE: 08/03/2006

TIME: 09:14:07

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3 <110> APPLICANT: KANEKA CORPORATION
      5 <120> TITLE OF INVENTION: PORYPEPTIDE HAVING AMIDASE ACTIVITY AND GENE THEREOF
      7 <130> FILE REFERENCE: 5404-161(B040008W001)
C--> 9 <140> CURRENT APPLICATION NUMBER: US/10/587,085
C--> 9 <141> CURRENT FILING DATE: 2006-07-21
      9 <150> PRIOR APPLICATION NUMBER: PCT/JP2005/000951
                                                                    cpg-6)
     10 <151> PRIOR FILING DATE: 2005-01-26
     12 <150> PRIOR APPLICATION NUMBER: JP2004-028041
     13 <151> PRIOR FILING DATE: 2004-02-04
     15 <160> NUMBER OF SEQ ID NOS: 11
     17 <170> SOFTWARE: PatentIn version 3.1
     19 <210> SEQ ID NO: 1
     20 <211> LENGTH: 388
     21 <212> TYPE: PRT
     22 <213 > ORGANISM: Arthrobacter sp.
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     37 Trp Glu Glu Pro Arg Phe Ala Gly Val Phe Ser Leu Asn Gly Ser Gly
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     40 Glu Trp Ser Gly Thr Ser Phe Val Arg Glu Thr Gly Cys Leu Tyr Gly
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     43 Pro Ile Met Thr Thr Asn Ser His Ser Ile Gly Ser Val Arg Asn Ala
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     52 His Val Lys Asp Glu His Val Ala Glu Ala Ile Asp Ser Ala Ser Ala
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     55 Asn Val Thr Glu Gly Asn Val Gly Gly Gly Thr Gly Asn Val Cys His
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     58 Gly Phe Lys Gly Gly Ile Gly Ser Ala Ser Arg Val Leu Gln Leu Gly
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     61 Glu Glu Thr Tyr Thr Leu Gly Val Leu Val Gln Ala Asn His Gly Leu
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64 Arg Asp Glu Phe Gln Val Thr Gly Val Pro Val Gly Arg Leu Ile Ser

| 65  | 210  |  |  |  |  | 215   |  |  |  |   | 220                                   |  |  |                  |  |                          |  |  |  |  |  |  |  |
|---|--|--|--|--|--|---|--|--|--|---|---------------------------------------|--|--|------------------|--|--------------------------|--|--|--|--|--|--|--|
| 67 Thr  |  | Glu  | Tle  | Pro  |  |   | Pro  | Ser  | Glv  | Phe   |                                       | Ara  | Δτα  | Ser              | Ser  |                          |  |  |  |  |  |  |  |
| 68 225  | _  | Q1 a   | 110  |  | 230  | O L y   | 110  | DCI  | _  | 235   | , rob                                 | y  | TT 9   | DCI              | 240  |                          |  |  |  |  |  |  |  |
| 70 Pro  |  | Lvs  | Asn  | Ser  |  | Len   | Val  | Val  |  |   | Thr                                   | Asn  | Δla  | Pro              |  |                          |  |  |  |  |  |  |  |
| 70 110  | 1110   | Lyb  | 11011  | 245  | 110  | LCu   | V ( ) 1                                      |  | 250  | 1114  | 1114                                  | 1105   | 7,10   | 255              | <b>LC</b> U  |                          |  |  |  |  |  |  |  |
| 73 Leu  | Pro  | Glv  | Gln  |  | Glu  | Ara   | Val  |  |  | Ara   | Ser                                   | Thr  | T.em   |                  | Tle  |                          |  |  |  |  |  |  |  |
| 73 <b>Lea</b>   |  | O <sub>1</sub>                                 | 260  | Dea  | 014  | ••• 9   |  | 265  |  | ••• 9   |                                       | 1111   | 270  |                  | 110  |                          |  |  |  |  |  |  |  |
| 76 Ala  | Ara  | Asn  |  | Ala  | Tvr  | Ala   |  |  | Len  | Ser   | Glv                                   | Asp  |  | Ala              | Len  |                          |  |  |  |  |  |  |  |
| 77  | 3  | 275  | <b>0</b> -1                                    |  | - <u>J</u>   |   | 280  |  |  | <b>-</b>  |                                       | 285  | 200  | 1120             | 200  |                          |  |  |  |  |  |  |  |
| 79 Ala  | Phe  |  | Thr  | Cvs  | Pro  | Gln   |  | Val  | Ser  | Glv   | Tvr                                   |  | Phe  | Glv              | Val  |                          |  |  |  |  |  |  |  |
| 80  | 290  |  |  |  |  | 295   |  |  |  | <b>-</b> 1  | 300                                   | <u>T</u> -                                     |  | 1                |  |                          |  |  |  |  |  |  |  |
| 82 Asp  | _  | Ser  | Pro  | Gly  | Thr  | _   | Arg  | Ala  | Leu  | Pro   |                                       | Ala  | Ala  | Thr              | Ala  |                          |  |  |  |  |  |  |  |
| 83 305  |  |  |  | 4  | 310  |   |  |  |  | 315   |                                       |  |  |                  | 320  |                          |  |  |  |  |  |  |  |
| 85 Gly  |  | Phe  | Glu  | Ala  | Ala  | Val   | Glu  | Ala  | Thr  | Glu   | Glu                                   | Ala  | Ile  | Val              |  |                          |  |  |  |  |  |  |  |
| 86  |  |  |  | 325  |  |   |  |  | 330  |   |                                       |  |  | 335              |  |                          |  |  |  |  |  |  |  |
| 88 Ala  | Leu  | Val  | His  | Ala  | Asp  | Thr   | Cys  | Thr  | Gly  | Ile   | Asp                                   | Asp  | Arq  |                  | Ala  |                          |  |  |  |  |  |  |  |
| 89  |  |  | 340  |  | _  |   | <del>-</del> -                               | 345  | 4  |   | _                                     | _  | 350  |                  |  |                          |  |  |  |  |  |  |  |
| 91 Tyr  | Gly  | Leu  | Glu  | Ala  | Ala  | Arq   | Leu  | Ala  | Arq  | Ser   | Ile                                   | Ser  | Glu  | Tyr              | Arq  |                          |  |  |  |  |  |  |  |
| 92  | _  | 355  |  |  |  | <b></b>   | 360  |  | ~  |   |                                       | 365  |  | 4                | J  |                          |  |  |  |  |  |  |  |
| 94 Gly  | Thr  | Gln  | Leu  | Tyr  | Pro  | Glu   | Lys  | Val  | Ser  | Asp   | Ser                                   | His  | Leu  | Glu              | Arq  |                          |  |  |  |  |  |  |  |
| 95  | 370  |  |  | -  |  | 375   | _  |  |  | -   | 380                                   |  |  |                  | J  |                          |  |  |  |  |  |  |  |
| 97 Arg  | Ser  | Gln  | Pro  |  |  |   |  |  |  |   |                                       |  |  |                  |  |                          |  |  |  |  |  |  |  |
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|   | J J  | cgt  | ggac   | tggg   | itg c  | agaa  | atac   | a ca   | .ggcg  | _   | c cga                                 | ıggad  | egaa   |                  |  | 58                       |  |  |  |  |  |  |  |
| 113   | 5 5  | cgt  | ggac   | tggg   | itg c  | agaa  | atac   | a ca   | .ggcg  | _   | c cga                                 | ıggad  | egaa   |                  | atg agc<br>Met Ser   | 58                       |  |  |  |  |  |  |  |
| 113<br>114  |  |  |  |  |  |   |  |  |  | agco  | _                                     |  |  | N<br>E           | Met Ser  |                          |  |  |  |  |  |  |  |
| 113<br>114<br>116 cg  | t ct   | g cto  | c cgt  | . gag  | cac  | gga   | atc  | gtc  | : atc  | agco<br>ggt   | ; cgt                                 | cto  | c caa  | N<br>Social      | Met Ser<br>L<br>g ggt  | 58<br>106                |  |  |  |  |  |  |  |
| 113<br>114<br>116 cg<br>117 Ar  | t ct   | g cto  | c cgt  | . gag  | cac  | gga   | atc<br>Ile                                   | gtc  | : atc  | agco<br>ggt   | ; cgt                                 | cto  | c caa  | N<br>Social      | Met Ser<br>L<br>g ggt  |                          |  |  |  |  |  |  |  |
| 113<br>114<br>116 cg<br>117 Ar<br>118   | t cto  | g cto<br>1 Leu<br>5                            | c cgt<br>ı Arg                                 | gag<br>Glu   | cac<br>His   | gga<br>Gly  | atc<br>Ile<br>10                             | gtc<br>Val   | atc<br>Ile   | agco<br>ggt<br>Gly  | cgt<br>Arg                            | cto<br>Leu<br>15                               | c caa  | e ccg            | Met Ser<br>l<br>g ggt<br>o Gly                               | 106                      |  |  |  |  |  |  |  |
| 113<br>114<br>116 cg<br>117 Ar<br>118<br>120 tc   | t cto  | g cto<br>1 Leu<br>5<br>g aac                   | c cgt<br>1 Arg                                 | gag<br>Glu   | cac<br>His   | gga<br>Gly<br>gac                                   | atc<br>Ile<br>10                             | gtc<br>Val<br>gca                                    | atc<br>Ile   | agco<br>ggt<br>Gly  | cgt<br>Arg                            | t cto<br>Lev<br>15<br>gta                      | c caa<br>1 Glr<br>1 ggo                            | e cat            | Met Ser g ggt Gly tca  |                          |  |  |  |  |  |  |  |
| 113<br>114<br>116 cg<br>117 Ar<br>118<br>120 tc<br>121 Se   | t cto<br>g Lei<br>t cto<br>r Lei   | g cto<br>1 Leu<br>5<br>g aac                   | c cgt<br>1 Arg                                 | gag<br>Glu   | cac<br>His   | gga<br>Gly<br>gac<br>Asp                            | atc<br>Ile<br>10                             | gtc<br>Val<br>gca                                    | atc<br>Ile   | agco<br>ggt<br>Gly  | cgt<br>Arg                            | t cto<br>Lev<br>15<br>gta                      | c caa<br>1 Glr<br>1 ggo                            | e cat            | Met Ser g ggt Gly tca  | 106                      |  |  |  |  |  |  |  |
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| 113<br>114<br>116 cg<br>117 Ar<br>118<br>120 tc<br>121 Se<br>122<br>124 ac<br>125 Th<br>126 35<br>128 cg                  | t cto<br>g Len<br>t cto<br>r Len<br>20<br>a ato<br>r Ile                   | g cto Let 5 g aac l Asr c ato                  | c cgt<br>acc<br>Thr<br>g cgc                   | gag<br>Glu<br>att<br>Ile<br>ggt<br>Gly                     | cac<br>His<br>gca<br>Ala<br>tct<br>Ser<br>40               | gga<br>Gly<br>gac<br>Asp<br>25<br>ggg<br>Gly        | atc<br>Ile<br>10<br>gtc<br>Val<br>ccc<br>Pro | gtc<br>Val<br>gca<br>Ala<br>ctg<br>Leu               | atc<br>Ile<br>ggc<br>Gly<br>tcc<br>Ser                     | ggt<br>ggt<br>gtt<br>Val  | cgt Arg Arg 30 Ggg                    | t cto<br>Lev<br>15<br>gta<br>Val               | c caa<br>gga<br>Gly<br>Gly                         | c cat            | Met Ser  g ggt g Gly tca s Ser g gtt Val 50 g gag            | 106<br>154               |  |  |  |  |  |  |  |
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| 113<br>114<br>116 cg<br>117 Ar<br>118<br>120 tc<br>121 Se<br>122<br>124 ac<br>125 Th<br>126 35<br>128 cg<br>129 Ar<br>130 | t cto<br>g Lev<br>t cto<br>r Lev<br>20<br>a ato<br>r Ile<br>c aca          | g cto Let 5 g aac a Asr c atc e Met            | c cgt<br>a Arg<br>c acc<br>Thr<br>g cgc<br>Arg | gag<br>Glu<br>att<br>Ile<br>ggt<br>Gly<br>aca<br>Thr       | cac<br>His<br>gca<br>Ala<br>tct<br>Ser<br>40<br>gcc        | gga<br>Gly<br>gac<br>Asp<br>25<br>ggg<br>Gly<br>atc | atc<br>Ile<br>10<br>gtc<br>Val<br>ccc<br>Pro | gtc<br>Val<br>gca<br>Ala<br>ctg<br>Leu<br>cct        | atc<br>Ile<br>ggc<br>Gly<br>tcc<br>Ser<br>cac<br>His       | ggt<br>ggt<br>gtt<br>Val  | cgt<br>Arg<br>Arg<br>30<br>ggo<br>Gly | t cto<br>Lev<br>15<br>gta<br>Val<br>Cat<br>His | c caa<br>i Gli<br>a ggo<br>i Gli<br>c Gli<br>c ato | cate His         | Met Ser  J ggt  Gly  tca  Ser  A gtt  Val  50  J gag  Glu    | 106<br>154<br>202<br>250 |  |  |  |  |  |  |  |
| 113<br>114<br>116 cg<br>117 Ar<br>118<br>120 tc<br>121 Se<br>122<br>124 ac<br>125 Th<br>126 35<br>128 cg<br>129 Ar        | t cto<br>g Len<br>t cto<br>r Len<br>20<br>a ato<br>r Ile<br>c aca<br>g Tho | g cto Let 5 g aac l Asr c atc e Met a ggg      | c cgt a Arg c acc a Thr c acc y Car y Val      | gag<br>Glu<br>att<br>Ile<br>ggt<br>Gly<br>aca<br>Thr<br>55 | cac<br>His<br>gca<br>Ala<br>tct<br>Ser<br>40<br>gcc<br>Ala | gga<br>Gly<br>gac<br>Asp<br>25<br>ggg<br>Gly<br>atc | atc<br>Ile<br>10<br>gtc<br>Val<br>ccc<br>Pro | gtc<br>Val<br>gca<br>Ala<br>ctg<br>Leu<br>cct<br>Pro | atc<br>Ile<br>ggc<br>Gly<br>tcc<br>Ser<br>cac<br>His<br>60 | ggt<br>ggt<br>gtt<br>Val<br>ato<br>45<br>gaa<br>Glu                                     | cgt Arg Arg 30 Ggg Gly Ggg            | t cto<br>Lev<br>15<br>gta<br>Val<br>Cat<br>His | c caa<br>i Gli<br>a ggo<br>i Gli<br>c ggo<br>c ato | cate History Pro | Met Ser  J ggt  Gly  tca Ser  A gtt  Val  50 J gag  Glu  tgg | 106<br>154<br>202        |  |  |  |  |  |  |  |

| 134 |     |     |     | 70  |     |     |     |                | 75  |     |     |     |     | 80  |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 136 | agc | gga | acc | tcg | ttc | gtc | agg | gag            | acc | ggg | tgt | ctt | tat | ggc | cct | atc | 346  |
| 137 | Ser | Gly | Thr | Ser | Phe | Val | Arg | Glu            | Thr | Gly | Cys | Leu | Tyr | Gly | Pro | Ile |      |
| 138 |     |     | 85  |     |     |     |     | 90             |     |     |     |     | 95  |     |     |     |      |
| 140 | atg | acg | acg | aat | tcg | cac | agc | att            | gga | tcg | gtc | agg | aac | gcc | gtc | atc | 394  |
| 141 | Met | Thr | Thr | Asn | Ser | His | Ser | Ile            | Gly | Ser | Val | Arg | Asn | Ala | Val | Ile |      |
| 142 |     | 100 |     |     |     |     | 105 |                |     |     |     | 110 |     |     |     |     |      |
| 144 | aag | cgt | gaa | gta | gcc | cgg | cgg | gga            | agc | ctg | gag | agg | ctc | cct | ctc | gtg | 442  |
| 145 | Lys | Arg | Glu | Val | Ala | Arg | Arg | Gly            | Ser | Leu | Glu | Arg | Leu | Pro | Leu | Val |      |
| 146 | 115 |     |     |     |     | 120 |     |                |     |     | 125 |     |     |     |     | 130 |      |
| 148 | gga | gaa | acc | ttt | gat | ggc | cta | ctc            | aat | gac | atc | agc | ggc | atg | cac | gtc | 490  |
| 149 | Gly | Glu | Thr | Phe | Asp | Gly | Leu | Leu            | Asn | Asp | Ile | Ser | Gly | Met | His | Val |      |
| 150 |     |     |     |     | 135 |     |     |                |     | 140 |     |     |     |     | 145 |     |      |
| 152 | aag | gac | gaa | cac | gtg | gcc | gag | gcc            | atc | gac | tcc | gcc | tcc | gca | aat | gtt | 538  |
| 153 | Lys | Asp | Glu | His | Val | Ala | Glu | Ala            | Ile | Asp | Ser | Ala | Ser | Ala | Asn | Val |      |
| 154 |     |     |     | 150 |     |     |     |                | 155 |     |     |     |     | 160 |     |     |      |
| 156 | acc | gaa | ggc | aat | gtt | ggc | ggt | ggg            | acc | gga | aat | gtt | tgt | cac | ggt | ttc | 586  |
| 157 | Thr | Glu | Gly | Asn | Val | Gly | Gly | Gly            | Thr | Gly | Asn | Val | Cys | His | Gly | Phe |      |
| 158 |     |     | 165 |     |     |     |     | 170            |     |     |     |     | 175 |     |     |     |      |
| 160 | aaa | ggc | ggt | att | gga | agt | gcc | tcg            | cgc | gtg | ttg | caa | ttg | ggc | gag | gaa | 634  |
| 161 | Lys | Gly | Gly | Ile | Gly | Ser | Ala | Ser            | Arg | Val | Leu | Gln | Leu | Gly | Glu | Glu |      |
| 162 |     | 180 |     |     |     |     | 185 |                |     |     |     | 190 |     |     |     |     |      |
| 164 | acc | tac | act | ttg | ggg | gtt | ctc | gtc            | caa | gcc | aac | cac | ggc | ctt | cgt | gac | 682  |
| 165 | Thr | Tyr | Thr | Leu | Gly | Val | Leu | Val            | Gln | Ala | Asn | His | Gly | Leu | Arg | Asp |      |
| 166 | 195 |     |     |     |     | 200 |     |                |     |     | 205 |     |     |     |     | 210 |      |
| 168 | gaa | ttt | cag | gtg | acg | gga | gta | CCC            | gtg | gga | agg | ctc | ata | tct | acg | gac | 730  |
| 169 | Glu | Phe | Gln | Val | Thr | Gly | Val | Pro            | Val | Gly | Arg | Leu | Ile | Ser | Thr | Asp |      |
| 170 |     |     |     |     | 215 |     |     |                |     | 220 |     |     |     |     | 225 |     |      |
| 172 | gag | atc | CCC | ttg | ggg | cct | tca | ggt            | ttt | gat | cga | agg | tct | tca | cca | cac | 778  |
| 173 | Glu | Ile | Pro | Leu | Gly | Pro | Ser | Gly            | Phe | Asp | Arg | Arg | Ser | Ser | Pro | His |      |
| 174 |     |     |     | 230 |     |     |     |                | 235 |     |     |     |     | 240 |     |     |      |
| 176 | aaa | aac | agt | att | ctt | gtc | gtc | gtg            | gca | acc | gac | gcg | cct | cta | cta | ccg | 826  |
| 177 | Lys | Asn | Ser | Ile | Leu | Val | Val | Val            | Ala | Thr | Asp | Ala | Pro | Leu | Leu | Pro |      |
| 178 |     |     | 245 |     |     |     |     | 250            |     |     |     |     | 255 |     |     |     |      |
| 180 | ggc | caa | ctg | gaa | cgc | gtt | gct | cac            | cgt | tct | acc | cta | ggc | att | gcc | cgt | 874  |
| 181 | Gly | Gln | Leu | Glu | Arg | Val | Ala | His            | Arg | Ser | Thr | Leu | Gly | Ile | Ala | Arg |      |
| 182 |     | 260 |     |     |     |     | 265 |                |     |     |     | 270 |     |     |     |     |      |
|     |     |     |     |     |     |     |     |                |     |     | gac |     |     |     |     |     | 922  |
| 185 | Asn | Gly | Ala | Tyr | Ala | His | Asn | Leu            | Ser | Gly | Asp | Leu | Ala | Leu | Ala | Phe |      |
| 186 | 275 |     |     |     |     | 280 |     |                |     |     | 285 |     |     |     |     | 290 |      |
|     |     |     |     |     | _   |     |     | · <del>-</del> |     |     | gat |     |     |     |     |     | 970  |
| 189 | Ser | Thr | Cys | Pro | Gln | Pro | Val | Ser            | Gly | Tyr | Asp | Phe | Gly | Val | Asp | Thr |      |
| 190 |     |     |     |     | 295 |     |     |                |     | 300 |     |     |     |     | 305 |     |      |
| 192 | agt | cct | ggg | acc | att | cgc | gcc | ctg            | CCC | aac | gcc | gca | acg | gct | ggc | ctc | 1018 |
| 193 | Ser | Pro | Gly | Thr | Ile | Arg | Ala | Leu            | Pro | Asn | Ala | Ala | Thr | Ala | Gly | Leu |      |
| 194 |     |     |     | 310 |     |     |     |                | 315 |     |     |     |     | 320 |     |     |      |
|     |     | _   |     | _   | _   |     | _   |                |     | _   | gcg |     |     |     |     |     | 1066 |
|     | Phe | Glu | Ala | Ala | Val | Glu | Ala | Thr            | Glu | Glu | Ala | Ile | Val | Ser | Ala | Leu |      |
| 198 |     |     | 325 |     |     |     |     | 330            |     |     |     |     | 335 |     |     |     |      |

| 200        | gtc  | cac         | gcc      | gac          | acc  | tgc       | acc     | ggg         | atc   | gat      | gac          | agg            | gtt         | gcc      | tat   | ggg            | 1114  |
|------------|--|-------------|----------|--------------|------|-----------|---------|-------------|-------|----------|--------------|----------------|-------------|----------|-------|----------------|-------|
| 201<br>202 | Val  | His         | Ala      | Asp          | Thr  | Cys       | Thr 345 | Gly         | Ile   | Asp      | Asp          | Arg<br>350     | Val         | Ala      | Tyr   | Gly            |       |
|            | ttg  |             | aca      | qct          | cqa  | ctt       | _       | cat         | tca   | att      | tca          | _              | tat         | cga      | ggc   | acc            | 1162  |
|            | Leu  |             |          | _            | _    |           |         | _           |       |          | _            |                |             | _        |       |                |       |
|            | 355  |             |          |              | _    | 360       |         |             |       |          | 365          |                | -           | J        | -     | 370            |       |
| 208        | cag  | ctg         | tat      | ccg          | gag  | aaa       | gtg     | tcg         | gat   | tcc      | cat          | ctt            | gaa         | cga      | agg   | agc            | 1210  |
|            | Gln  | Leu         | Tyr      | Pro          | _    | Lys       | Val     | Ser         | Asp   |          | His          | Leu            | Glu         | Arg      | _     | Ser            |       |
| 210        |  |             | <b>.</b> |              | 375  |           |         |             |       | 380      |              |                |             |          | 385   |                | 1050  |
|            | cag<br>Gln   |             | tga      | ccg          | cege | gca g     | gccaa   | agcca       | aa go | cacca    | accc         | c 999          | gcaaa       | aggc     |       |                | 1259  |
|            | 216 cgggaaacgg tccaacctaa cacgcaacga t   |             |          |              |      |           |         |             |       |          |              |                |             |          |       | 1290           |       |
|            | 220 <210> SEQ ID NO: 3   |             |          |              |      |           |         |             |       |          |              |                |             |          |       |                |       |
| 221        | 221 <211> LENGTH: 1167   |             |          |              |      |           |         |             |       |          |              |                |             |          |       |                |       |
| 222        | 222 <212> TYPE: DNA  |             |          |              |      |           |         |             |       |          |              |                |             |          |       |                |       |
|            | 23 <213 > ORGANISM: Arthrobacter sp.   |             |          |              |      |           |         |             |       |          |              |                |             |          |       |                |       |
|            | 225 <220> FEATURE:   |             |          |              |      |           |         |             |       |          |              |                |             |          |       |                |       |
|            | 226 <221> NAME/KEY: CDS  |             |          |              |      |           |         |             |       |          |              |                |             |          |       |                |       |
|            | 227 <222> LOCATION: (1)(1167) 228 <223> OTHER INFORMATION: sequence coding for amidase |             |          |              |      |           |         |             |       |          |              |                |             |          |       |                |       |
|            | <400   |             |          |              |      | LION      | . sec   | Juem        | Je C  | OCTIT    | 9 101        | L alli.        | Luast       | =        |       |                |       |
|            | atg  |             |          |              |      | cat       | qaq     | cac         | qqa   | atc      | atc          | atc            | aat         | cat      | ctc   | caa            | 48    |
|            | Met  |             |          |              |      |           | _       |             |       |          | _            |                |             | _        |       |                |       |
| 233        |  |             | _        |              | 5    |           |         |             | _     | 10       |              |                | _           |          | 15    |                |       |
| 235        | ccg  | ggt         | tct      | ctg          | aac  | acc       | att     | gca         | gac   | gtc      | gca          | ggc            | gtt         | cgc      | gta   | ggc            | 96    |
|            | Pro  | Gly         | Ser      |              | Asn  | Thr       | Ile     | Ala         | _     | Val      | Ala          | Gly            | Val         | _        | Val   | Gly            |       |
| 237        |  | <b>.</b>    |          | 20           |      |           |         | <b>L</b> _L | 25    |          |              | <b>.</b>       |             | 30       |       |                | 1 4 4 |
|            | cat<br>His   |             |          |              | _    | _         |         |             |       |          | _            |                |             |          |       |                | 144   |
| 241        | 1112   | Ser         | 35       | 116          | Mec  | Arg       | Gry     | 40          | Gry   | PIO      | цец          | per            | 45          | GIY      | 1115  | Gry            |       |
|            | cca  | qtt         |          | aca          | qqq  | qta       | aca     |             | atc   | atc      | cct          | cac            |             | qqa      | qac   | atc            | 192   |
|            | Pro  | _           | _        |              |      | _         |         | _           |       |          |              |                | _           |          |       |                |       |
| 245        |  | 50          |          |              |      |           | 55      |             |       |          |              | 60             |             |          |       |                |       |
|            | tgg  |             |          |              |      |           | _       |             | _     |          |              | _              |             |          | _     |                | 240   |
|            | Trp  | GLu         | Glu      | Pro          | Arg  |           | Ala     | GLY         | Val   | Phe      |              | Leu            | Asn         | Gly      | Ser   | _              |       |
| 249        |  | taa         | 200      | <i>~~</i>    | 200  | 70<br>taa | ++0     | ata         | 200   | ~~~      | 75           | ~~~            | tat         | a++      | + - + | 80             | 200   |
|            | gaa<br>Glu   |             | _        |              |      | _         |         |             |       | _        |              |                | <del></del> |          |       | _ <del>-</del> | 288   |
| 253        | OLU  | 1-5         |          | Oly          | 85   |           | 1110    | VUL         | 1129  | 90       | ****         | O <sub>T</sub> | Cys         | 11 C C   | 95    | Ory            |       |
|            | cct  | atc         | atg      | acg          | acg  | aat       | tcg     | cac         | agc   | att      | gga          | tcg            | gtc         | agg      | aac   | gcc            | 336   |
|            | Pro  |             | _        | <del>-</del> | _    |           | _       |             | _     |          |              | _              | _           |          |       | _              |       |
| 257        |  |             |          | 100          |      |           |         |             | 105   |          |              |                |             | 110      |       |                |       |
|            | gtc  |             |          |              |      |           |         |             |       |          |              |                |             |          |       |                | 384   |
|            | Val  | Ile         |          | Arg          | Glu  | Val       | Ala     |             | Arg   | Gly      | Ser          | Leu            |             | Arg      | Leu   | Pro            |       |
| 261        | a+ a   | ~+ <i>~</i> | 115      | <b>C</b> 22  | 200  | + + +     | ~n+     | 120         | at a  | a+a      | 3 <b>5</b> + | ~~~            | 125         | 2~~      | ~~~   | a + ~          | A D D |
|            | ctc<br>Leu   |             |          | _            |      |           | _       |             |       |          |              | _              |             | _        |       | _              | 432   |
| 265        | ₽₽   | 130         | Отy      | Jiu          | ***  | T 11G     | 135     | Сту         | ח⊄ת   | ח⊂u      | UĐII         | 140            | TTC         | DET      | Эту   | MEL            |       |
|            | cac  |             | aaq      | qac          | qaa  | cac       |         | qcc         | qaq   | qcc      | atc          |                | tcc         | qcc      | tcc   | qca            | 480   |
|            |  | _           | ٦        | _            | _    |           | ~ J     | ~           | J J   | <u> </u> | _            | ~              | _           | <b>→</b> | _     | _              |       |

|     | His<br>145 | Val              | Lys   | Asp   | Glu | His<br>150 | Val | Ala          | Glu | Ala         | Ile<br>155 | Asp   | Ser   | Ala   | Ser  | Ala<br>160 |       |
|-----|------------|------------------|-------|-------|-----|------------|-----|--------------|-----|-------------|------------|-------|-------|-------|------|------------|-------|
|     |            | att              | acc   | qaa   | aac |            | gtt | aac          | aat | aga         |            | qqa   | aat   | att   | tat  |            | 528   |
|     |            | - <del>-</del> - |       |       | -   |            | Val |              |     |             |            |       |       | _     | _    |            |       |
| 273 |            |                  |       |       | 165 |            |     | •            | •   | 170         |            | •     |       |       | 175  |            |       |
|     | qqt        | ttc              | aaa   | ggc   | ggt | att        | gga | aqt          | qcc | tcg         | cqc        | qtq   | ttq   | caa   | ttq  | qqc        | 576   |
|     |            |                  |       |       |     |            | Gly |              | _   | ~           | _          | -     | _     |       |      |            |       |
| 277 | •          |                  | -     | 180   | -   |            | -   |              | 185 |             | <b>-</b>   |       |       | 190   |      | -          |       |
| 279 | gag        | gaa              | acc   | tac   | act | ttg        | ggg | gtt          | ctc | gtc         | caa        | gcc   | aac   | cac   | ggc  | ctt        | 624   |
| 280 | Glu        | Glu              | Thr   | Tyr   | Thr | Leu        | Gly | Val          | Leu | Val         | Gln        | Āla   | Asn   | His   | Gly  | Leu        |       |
| 281 |            |                  | 195   | _     |     |            | _   | 200          |     |             |            |       | 205   |       | _    |            |       |
| 283 | cgt        | gac              | gaa   | ttt   | cag | gtg        | acg | gga          | gta | CCC         | gtg        | gga   | agg   | ctc   | ata  | tct        | 672   |
| 284 | Arg        | Asp              | Glu   | Phe   | Gln | Val        | Thr | Gly          | Val | Pro         | Val        | Gly   | Arg   | Leu   | Ile  | Ser        |       |
| 285 |            | 210              |       |       |     |            | 215 |              |     |             |            | 220   |       |       |      |            |       |
| 287 | acg        | gac              | gag   | atc   | CCC | ttg        | ggg | cct          | tca | ggt         | ttt        | gat   | cga   | agg   | tct  | tca        | 720   |
| 288 | Thr        | Asp              | Glu   | Ile   | Pro | Leu        | Gly | Pro          | Ser | Gly         | Phe        | Asp   | Arg   | Arg   | Ser  | Ser        |       |
| 289 | 225        |                  |       |       |     | 230        |     |              |     |             | 235        |       |       |       |      | 240        |       |
| 291 | cca        | cac              | aaa   | aac   | agt | att        | ctt | gtc          | gtc | gtg         | gca        | acc   | gac   | gcg   | cct  | cta        | 768   |
| 292 | Pro        | His              | Lys   | Asn   | Ser | Ile        | Leu | Val          | Val | Val         | Ala        | Thr   | Asp   | Ala   | Pro  | Leu        |       |
| 293 |            |                  |       |       | 245 |            |     |              |     | 250         |            |       |       |       | 255  |            |       |
| 295 | cta        | ccg              | ggc   | caa   | ctg | gaa        | cgc | gtt          | gct | cac         | cgt        | tct   | acc   | cta   | ggc  | att        | 816   |
|     | Leu        | Pro              | Gly   |       | Leu | Glu        | Arg | Val          |     | His         | Arg        | Ser   | Thr   |       | Gly  | Ile        |       |
| 297 |            |                  |       | 260   |     |            |     |              | 265 |             |            |       |       | 270   |      |            |       |
|     | _          |                  |       |       | _   |            | gcg | _            |     |             | _          |       |       |       | _    |            | 864   |
|     | Ala        | Arg              |       | Gly   | Ala | Tyr        | Ala |              | Asn | Leu         | Ser        | Gly   |       | Leu   | Ala  | Leu        |       |
| 301 |            |                  | 275   |       |     |            |     | 280          | •   |             |            |       | 285   |       |      | •          | 0.1.0 |
|     |            |                  |       |       | _   | _          | cag |              | -   | _           | <b>—</b> — |       | _     |       |      |            | 912   |
|     | Ala        |                  | ser   | Tnr   | Cys | Pro        | Gln | Pro          | vaı | ser         | GIY        | _     | Asp   | Pne   | GIY  | vai        |       |
| 305 | ~~+        | 290              | 2 art | aa+   | ~~~ | 200        | 295 | ~~~          | ~~~ | a+ a        | ~~~        | 300   | ~ ~ ~ | ~ ~ ~ |      | ~~+        | 0.00  |
|     | _          | _                | _     |       |     |            | att | _            | _   | _           |            |       | _     | _     | _    |            | 960   |
|     | 305        | TIIT             | 261   | PIO   | GTA | 310        | Ile | Arg          | MIG | ьеи         | 315        | ASII  | Ald   | нта   | TIIT | 320        |       |
|     |            | ctc              | ttc   | aaa   | aca |            | gtt | aaa          | acc | act         |            | caa   | aca   | att   | att  |            | 1008  |
|     |            |                  |       |       |     | _          | Val |              | _   |             |            | -     |       |       | _    |            | 1008  |
| 313 | Cly        | #Cu              | 1110  | Oru   | 325 | ALU        | vui | OIU          | AIG | 330         | OIU        | OIU   | ALU   | 110   | 335  | DCI        |       |
|     | aca        | ct.t             | at.c  | cac   |     | gac        | acc | tac          | acc | -           | atc        | gat.  | gac   | agg   |      | acc        | 1056  |
|     |            |                  | _     |       | _   | _          | Thr | _            |     |             |            | _     | _     |       | _    |            | 2030  |
| 317 |            |                  |       | 340   |     | - 1 P      |     | <b>4</b> 2 2 | 345 | <b>V</b> -1 |            | - 1 P | P     | 350   |      |            |       |
|     | tat        | aaa              | tta   |       | aca | act        | cqa | ctt          |     | cat         | tca        | att   | tca   |       | tat  | cga        | 1104  |
|     |            |                  | _     |       | ~ ~ | _          | Arg |              | _   |             |            |       | _     | _     |      |            |       |
| 321 | 4          | 4                | 355   |       |     |            |     | 360          |     | J           |            |       | 365   |       | 4    | <b>J</b>   |       |
|     | qqc        | acc              | caq   | ctq   | tat | ccq        | qaq | aaa          | qtq | tcq         | qat        | tcc   | cat   | ctt   | qaa  | cga        | 1152  |
|     |            |                  | _     | _     |     | _          | Glu |              |     | _           | _          |       |       |       | _    | _          |       |
| 325 | _          | 370              |       |       | -   |            | 375 | _            |     |             | _          | 380   |       |       |      |            |       |
| 327 | agg        | agc              | cag   | ccg   | tga |            |     |              |     |             |            |       |       |       |      |            | 1167  |
|     | Arg        | -                | _     | _     | _   |            |     |              |     |             |            |       |       |       |      |            |       |
| 329 | 385        |                  |       |       |     |            |     |              |     |             |            |       |       |       |      |            |       |
| 332 | <210       | )> SE            | EQ II | ON C  | : 4 |            |     |              |     |             |            |       |       |       |      |            |       |
| 333 | <211       | L> LE            | ENGTI | H: 16 | 5   |            |     |              |     |             |            |       |       |       |      |            |       |

RAW SEQUENCE LISTING ERROR SUMMARY DATE: 08/03/2006
PATENT APPLICATION: US/10/587,085 TIME: 09:14:08

Input Set : A:\5404-161 Sequence Listing.txt
Output Set: N:\CRF4\08032006\J587085.raw

#### Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:4; N Pos. 2,11 Seq#:5; N Pos. 6,15 
 VERIFICATION SUMMARY
 DATE: 08/03/2006

 PATENT APPLICATION: US/10/587,085
 TIME: 09:14:08

Input Set : A:\5404-161 Sequence Listing.txt
Output Set: N:\CRF4\08032006\J587085.raw

L:9 M:270 C: Current Application Number differs, Replaced Current Application No

L:9 M:271 C: Current Filing Date differs, Replaced Current Filing Date

L:351 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:0 L:373 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:0